

# PS8808

## Operation Manual

V1.0



Thank you for using LCOM products. The PS8808 Digital Output Pressure Transmitter is a precise instrument. Read this manual carefully before use.

## 1 Introduction

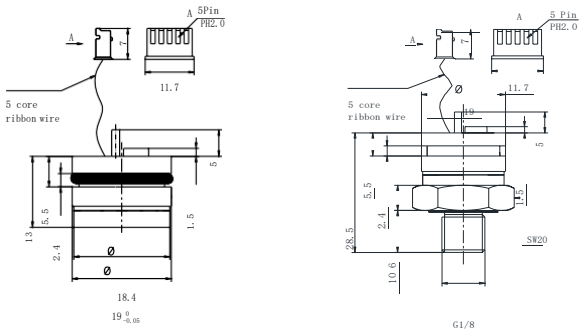
The L-com PS8808 I<sup>2</sup>C Digital Pressure Transducer and Temperature Sensor is a piezoresistive pressure sensor with a 316L stainless steel corrugated diaphragm and oil filled construction. The silicon oil safely transfers the fluid pressure from the diaphragm to the piezoresistive detector producing an analog signal. This signal is then compensated for linearity and temperature, and the convenient I<sup>2</sup>C standard interface provides a 14-bit pressure measurement and an 11-bit temperature measurement. The PS8808 is a widely applicable solution meeting the needs for pressure and temperature measurement of all liquids compatible with its 316L stainless steel and Viton construction.

## 2 Specifications

Parameters	Min.	Typ.	Max.	Unit
Zero Pressure Output (5%~95%)		0333		Count Hex
FS Pressure Output (5%~95%)		3CCB		Count Hex
Accuracy	-0.5		+0.5	%Span
Total Error Band*	-1		1	%Span

Pressure Resolution	0.008			%Span
Temperature Accuracy	-1.5		+1.5	℃
Temperature Resolution		0.1		℃
Input Voltage Range	3.2	3.3	3.4	V
Normal I <sub>DD</sub>		2.5	3	mA
Low Power I <sub>DD</sub>	5 (Standby)			uA
Insulation Resistance (100VDC)	100 MΩ, 100VDC			
Overpressure			1.5×	Rated Pressure
Long Term Stability		±0.3		%Span /Year
Compensated Temperature	0		+50	℃
Working Temperature	-10		+80	℃
Storage Temperature	-40		+125	℃
Output Pressure Resolution			14	Bits
Output Temperature Resolution			11	Bits
Start Time to Data Ready			8.4	ms
Sampling Frequency	1.5			ms
Output Type	5%~95% (The percentage of 14 bit pressure digits)			
*Total Error Band: including calibration error and temperature effects over the compensated temperature range.				

### 3 Outline Construction and Installation (Units: mm)



### 4 Electric Connection



Wire color	Electric connection
Black	+IN
Red	Null
Blue	SCL
White	SDA
Yellow	-IN

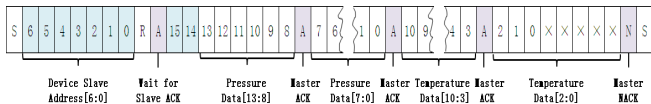
## 5 Read Operations

### 5.1 I<sup>2</sup>C

For read operations, the I<sup>2</sup>C master command starts with the 7bit slave address (default addr. 0×28H) with the 8thbit = 1 (READ). The

Transducer as the slave sends an acknowledge (ACK) indicating success.

Then 2-byte pressure data and 2-byte temperature data (T[10: 3] and T[2: 0]×××××) are returned from slave to master.



## 6 Notes

1. Please verify that the media being measured is compatible with the sensor's 316L and Viton construction.
2. Recommended installation dimension: 19.02mm ≤ diameter ≤19.05mm, depth ≥15.5mm.
3. It is recommended that the Transducer be isolated from mechanical stress.
4. Care must be taken during installation and handling as the diaphragm can be deformed or damaged by manual pressure, hard, or sharp objects.
5. Particular attention should be applied while removing the

protective cap and after the diaphragm has been exposed protection cap on the sensor very carefully during installation to avoid damaging the diaphragm.

6. Pulling on the ribbon wire or pushing on the circuit board must be avoided to prevent damage to the circuit board.
7. Verify that the pressure environment of your application will not exceed the maximum specified over-pressure for the sensor of 1.5x Full Scale.
8. The sensor's electronics, connectors and leads, and back pressure chamber will be damaged if exposed to wet, conductive, or corrosive materials.
9. The tube connecting the back-pressure chamber to the atmosphere must not be obstructed and must be protected from contamination.
10. The standards compliant I2C interface provides real-time sampling of temperature and pressure and easy integration with monitoring and operations applications.

## **7 Warranty**

Products manufactured and/or branded by seller are warranted for a period of one year from time of delivery against defects in workmanship

or materials or failure to operate as described in product data sheets under normal use. In some cases, the warranty period may exceed one year where a written warranty description specific to a certain product is stated in a contract or posted on a company website, product catalog or user's manual. Accessories and consumable goods such as batteries, chargers and accessory cables are warrantied for four months.

## Appendix

### 1. I<sup>2</sup>C Interface Parameters

Parameters	Symbol	Min.	Typ	Max.	Unit
SCLK Clock Frequency	f <sub>SCL</sub>	100		400	kHz
Start Condition Hold Time Relative To SCL Edge	t <sub>HDSTA</sub>	0.1			μs
Minimum SCL Clock Low Width	t <sub>LOW</sub>	0.6			μs
Minimum SCL Clock High Width	T <sub>HIGH</sub>	0.6			μs
Start Condition Setup Time Relative To SCL edge	t <sub>SUSTA</sub>	0.1			μs
Data Hold Time On SDA Relative To SCL Edge	t <sub>HDDAT</sub>	0			μs
Data Setup Time On SDA Relative To SCL Edge	t <sub>SUDAT</sub>	0.1			μs
Stop Condition Setup Time On SCL	t <sub>SUSTO</sub>	0.1			μs
BUS Free Time Between Stop And Start Condition	t <sub>BUS</sub>	2			μs



## 2. Transducer Pressure Output at Significant Percentages

%output	Digital Counts (decimal)	Digital Counts (hex)
0	0	0×0000
5	819	0×0333
10	1638	0×0666
50	8192	0×2000
90	14746	0×399A
95	15563	0×3CCB
100	16383	0×3FFF

## 3. Transducer Temperature Digital Output

Output °C	Digital Counts (decimal)	Digital Counts (hex)
-50	0	0×0000
0	512	0×0200
10	614	0×0266
25	767	0×02FF
40	921	0×0399
85	1381	0×0565
150	2047	0×07FF

## 4. Pressure Calculating Formula

5%~95% output: pressure= (FS pressure - Zero pressure) \* (Pressure applied-819) /14744

Temperature = (Digital count for Temp/2048)\*200.0-50

<http://www.l-com.com>

## About L-com



50 High Street, West Mill, 3rd Floor, Suite #302, North Andover, MA 01845, USA

L-com, a leading manufacturer of wired and wireless connectivity products, offers a wide range of solutions and unrivaled customer service for the electronics and data communications industries. The company's product portfolio includes cable assemblies, connectors, adapters, antennas, enclosures, surge protectors and more. L-com is headquartered in North Andover, Mass., is ISO 9001:2015 certified and many of its products are UL® recognized. L-com is an [Infinite Electronics](#) brand.

### Company Information

- OSA Connect # 09-35F-01749
- UL File #s E202291, E202292, E137014
- ISO Cert. #10098777 CAN6
- CADP CODE # 43271
- DIALS # 94-018-3072
- NAICS 332931, 335932, 334419 SICs 3679, 3679, 3644, 3680
- CCR Established
- Military Packaging Capable
- ISO Capabilities with a Government Representative Itinerary